



Report of the Commissioner

Department of Professional and Financial Regulation

**Submitted to the
Joint Standing Committee on
Labor, Commerce, Research and Economic Development**

Pursuant to Legislative Resolve 2011, c. 45

**Directing the Commissioner of Professional and Financial Regulation
to Convene a Working Group to Review the
Laws and Rules Governing Boilers**

January 15, 2012

Commissioner's Report Pursuant to Legislative Resolve 2011, c. 45

Legislative Resolve 2011, c. 45, enacted by the 125th Legislature, directs the Commissioner of the Department of Professional and Financial Regulation to "convene a working group to review the laws and rules governing boilers". The legislative language appears below.

"Resolve, Directing the Commissioner of Professional and Financial Regulation to Convene a Working Group to Review the Laws and Rules Governing Boilers"

Sec. 1. Commissioner of Professional and Financial Regulation to convene a working group to review the laws and rules governing boilers. Resolved: That the Commissioner of Professional and Financial Regulation shall convene a working group with the Board of Boilers and Pressure Vessels as well as other interested parties to review the current lack of uniformity in the laws and rules governing boilers, to develop recommendations to resolve conflicts and improve the regulation of boilers and to consider options for expanding inspections of boilers located in public places; and be it further

Sec. 2. Reporting date established. Resolved: That no later than January 15, 2012 the Commissioner of Professional and Financial Regulation shall submit a report of the findings and recommendations of the working group under section 1 to the Joint Standing Committee on Labor, Commerce, Research and Economic Development. That committee is authorized to introduce a bill on the subject matter of the report to the Second Regular Session of the 125th Legislature.

Resolve Background

LD 375 "*An Act to Exempt Boilers in Municipalities and Schoolhouses from State Inspection Requirements*" was considered by the Joint Standing Committee on Business, Research and Economic Development during the First Regular Session of the 125th Maine Legislature. The bill, as drafted, would have exempted steam heating boilers, hot water heating boilers, and hot water supply boilers located in schoolhouses or owned by municipalities from the State's boiler inspection requirements.

LD 375 was submitted at the request of the Maine Municipal Association (MMA).

The focus of the bill was to eliminate state inspection requirements for heating boilers located in schoolhouses and municipally owned buildings. No other buildings where the public may enter are required by the State to have annual heating boiler inspections. The inference of its sponsor and MMA is that the boiler inspection requirement for schoolhouses and municipally owned buildings is an unfair mandate on schools and municipalities.

LD 375 received a public hearing on April 12, 2011 before the Labor, Commerce, Research and Economic Development Committee. A member of the MMA spoke in favor of the bill. The Department of Professional and Financial Regulation, which administers a variety of licensing programs, opposed the bill. Representatives from the insurance industry and Cianbro also presented testimony in opposition.

The Committee voted against pursuing the bill, but elected to convert it to a resolve directing the Commissioner of Professional and Financial Regulation to convene a working group to review the laws and rules governing boilers and report findings and recommendations to the Committee on or before January 15, 2012.

General Overview of the Authority and Purpose of State Licensing Boards

Title 10, sec. 8008 states that *“the sole purpose of an occupational and professional regulatory board is to protect the public health and welfare. A board carries out this purpose by ensuring that the public is served by competent and honest practitioners and by establishing minimum standards of proficiency in the regulated professions by examining, licensing, regulating and disciplining practitioners of those regulated professions. Other goals or objectives may not supersede this purpose.”*

The tradition of professional self-regulation through the operation of state licensing boards using the expertise of gubernatorially appointed members of a profession is an important use of a state's police power to protect its citizens from harm.

The Board of Boilers and Pressure Vessels' primary purpose is to protect the public from the hazards associated with boilers and pressure vessels by adopting standards for construction and regulating the inspection of high-pressure and low-pressure boilers which are not exempt by law in the State of Maine. The Board also licenses qualified boiler inspectors and stationary steam engineers.

- A high-pressure boiler operates at more than 15 psi. The largest of these boilers are located in paper mills and power plants; however, they are also used in central heating plants and process plants by industry throughout the State.
- A low-pressure boiler is primarily used for space heating and hot water supply; however, some low-pressure boilers are used for industrial purposes.

The State protects the public by requiring that boilers be constructed and installed in accordance with national standards. High-pressure boilers are inspected at the time of installation, and annually thereafter. Other requirements apply to high-pressure boilers.

Low-pressure boilers, however, are inspected annually only when located in schoolhouses and municipally owned buildings. These inspections are conducted to ensure that boilers are maintained in a safe manner in accordance with the national standards adopted by the Board. The Board of Boilers and Pressure Vessels' inspection requirements for low-pressure and hot water supply boilers located in schoolhouses and municipally owned buildings are described on the following pages.

Discussion Process

The Department convened the first interested party stakeholder meeting on July 21, 2011 from 9:00 a.m.-12:00 p.m. at the Department in Gardiner, Maine. Additional meetings were held on September 13 and October 20. With John Burpee, Chief Boiler Inspector, acting as discussion chair, the group met for a total of approximately 12 hours. Participants included Representative James Gillway and representatives from the insurance industry, Cianbro, Maine Municipal Association, Maine Innkeepers Association, Maine Restaurant Association, Maine Merchants Association and Maine Hospital Association. A list of participants is attached to this report.

The group's several discussions focused on:

- The Maine Board of Boiler and Pressure Vessel's law governing current boiler inspection requirements for low-pressure boilers;
- Other New England states' boiler inspection requirements for low-pressure boilers; and
- Public safety.

There was general agreement that the discussions had been productive, with lines of communication opened between the interested parties. In addition, consensus was reached that the State should ensure that code standards for construction and installation are followed for all low-pressure boilers, and initial inspections should be performed to ensure proper installation. There was no consensus, however, on how specific inspection requirements should be changed.

Based on a review of the data available regarding reported inspections in other states, Maine inspectors are reporting fewer violations than the national average. This information could support extending the inspection frequency to more closely correlate with other states; however, extending the inspection frequency could lead to more violations being reported and increase the possibility of unsafe conditions existing for longer periods of time.

Changing the heat input size of boilers requiring inspection was discussed, but it was agreed that the specifics of what size needs to be inspected should be determined by the Board of Boilers and Pressure Vessels. While the potential energy in smaller boilers below 200,000 btu/hour heat input can be devastating should an explosion occur, increasing the size of boilers that require inspection would reduce costs for some boiler owners.

This report explains the Board's inspection requirements and the public safety concerns surrounding unsafe boilers. The report also provides information regarding typical safety violations noted during annual inspections of heating boilers located in schoolhouses and owned by municipalities.

Existing Statutory Requirements

Unless exempt by statute, all high-pressure boilers and low-pressure process boilers, regardless of location, are subject to the requirements of the Board.

Steam heating, hot water heating and hot water supply boilers located in schoolhouses or municipally owned buildings are also subject to the requirements of the Board, which include annual inspections. The Board adopted rules in 2005 to remove the annual inspection requirement on owners of smaller water boilers (below 200,000 btu/hour heat input) provided an initial inspection is conducted to verify compliance with the adopted standards.

Even though all steam heating, hot water heating and hot water supply boilers are to be constructed and installed in accordance with the rules adopted by the Board, it is a boiler owner's responsibility to install a boiler pursuant to state-adopted installation code requirements. Currently, there is no process in place to verify that boiler owners have complied with this requirement, unless the boiler is located in a school or municipally owned building. Consequently, many boilers in public buildings other than schools and municipally owned buildings may not meet the requirements of the installation standard.

Inspection Requirements in Other New England States

High-Pressure Boilers: All New England states inspect high-pressure boilers annually.

Low-Pressure Boilers: New Hampshire, Connecticut, Rhode Island and Vermont inspect low-pressure boilers biennially. Maine and Massachusetts inspect low-pressure boilers annually.

All New England states, except Maine, inspect low-pressure boilers in the following locations: State and county owned building, as well as churches, restaurants, hotels, stores, manufacturing heating plants, libraries, places of commerce, nursing homes, daycare facilities, and hospitals. Maine is the only state that limits its inspections for low-pressure boilers to those located in schools or municipally owned buildings.

All New England states exempt certain boilers from inspection requirements. Typically these include boilers that are federally owned or controlled, used for agricultural purposes, boilers located in private residences and small apartment buildings, and small water heaters.

State of Maine Inspection Process for High-Pressure Boilers and Low-Pressure Boilers Located in Schoolhouses and Municipally Owned Buildings

The Board of Boilers and Pressure Vessels establishes the code of construction and inspection standards for heating boilers and licenses “Authorized Inspectors” that complete the majority of State mandated (jurisdictional) inspections. State oversight ensures all authorized inspectors are inspecting in the same manner which provides consistent enforcement, proper inspection and consistent reporting of results.

If the owner of a boiler obtains boiler and machinery insurance, inspections are completed by an authorized inspector employed by the insurance carrier. If the owner does not obtain boiler and machinery insurance, the inspections will be completed by State Inspectors.

The authorized inspector performs the annual inspection and provides the inspection report to the State Boiler Inspector for evaluation and tracking.

State Boiler Inspectors review the reports. If deficiencies are noted, a Notice of Denial and Order of Correction is issued. If no deficiencies are noted, the report is processed and a certificate issued. Only the Chief Boiler Inspector for the State has the authority to deny a boiler certificate and order that repairs be made.

Once the owner completes the State mandated corrections, the owner reports the corrections to the authorized inspector. The authorized inspector notifies the State Inspector that the repairs have been completed. Once the State Inspector is satisfied the violations have been corrected, the report is processed and a certificate is issued.

State involvement increases if an abnormal situation occurs. For example, the State determines how to address variances, code interpretation, acceptable repairs that may be for a limited time until permanent repairs can be made, and non-code constructed boilers that have been installed and operating.

Common Inspection Violations

Inspection reports may cite one or more violations related to the safe operation of the boiler. Some of the more common violations relate to the issues discussed below:

CSD-1 Documentation: ASME Controls and Safety Devices for Automatically Fired Boilers is a standard adopted by the Board to ensure that an adequate number of safety controls are installed on a boiler to help avoid accidents with unattended boilers. The standard requires manual resets which do not permit the boiler to operate if the boiler reaches certain limits, such as those related to excess pressure, excess temperature or low water. The CSD-1 documentation reflects the testing of these controls and other operational controls at installation to ensure the boiler is safe to operate. The controls installed are the minimum number of controls that should provide safe automatic operation of the boiler. This report confirms that the installer has tested the safety

controls prior to automatic operation and that the safety controls work properly. The owner receives written confirmation from the installer that the boiler and its controls are working properly and is provided with a document that lists all the controls initially installed so future replacement of these controls are the same as originally installed.

Controls and Safety Devices: The controls installed on boilers are generally of two types--operational and safety shutdown. Unfortunately, all controls fail at some point but periodic testing will help ensure proper operation therefore increasing safety. The controls listed below are safety shutdown controls and they only operate if other components of the system are not operating properly. These controls provide critical backup to operating controls and reduce boiler problems.

- **Second Pressure Limit (Steam Boilers):** This additional control prevents pressure from increasing above the maximum allowable working pressure of the boiler if the operating control does not operate properly. Once actuated, a person is required to evaluate the system and manually reset the control to resume operation. If boiler pressure is too high, the threat of a pressure part failure (explosion) due to excess pressure increases.
- **Second Temperature Control (Hot Water Boilers):** This additional control is set higher than the normal operating control and is installed to prevent the boiler water from reaching too high a temperature if the operating control fails. Once actuated, a person is required to evaluate the system and manually reset the control to resume operation. If boiler water temperature is too high, the threat of water flashing to steam is increased.
- **Low Water Cutout (LWCO):** This control monitors water level in the boiler and secures the heat input (burner) to the boiler if the water level is below the level recommended by the manufacturer. A low water condition is dangerous because overheating can lead to metal failures which lead to pressure part explosions. This control typically functions with the makeup water system so if a low water condition is sensed, water is permitted to flow into the system and maintain an adequate water level. The operational controls for the burner may continue to operate if building pressure or temperature setpoints are not satisfied, even with low or no water condition. If the water is too low in the boiler and the burner continues to fire, the boiler metal begins to overheat. This overheating reduces the strength of the metal which can lead to component failure. Once the metal parts are weakened and fail, boiler system pressure is reduced causing any remaining water to flash to steam.
- **Pressure Relief/Safety Valve:** This safety device provides overpressure protection even if all other safety controls fail and is the most important safety device on a boiler to reduce the risks associated with steam explosions. It is not tied to the combustion system like the other controls listed above. It is a stand-alone device that backs up all other controls on the boiler. The safety relief valve or pressure relief valve will not operate in a properly functioning system. These

Typical safety valve violations include safety valves that are stuck in place or have deposits on them so they are not free to move, have improper pressure rating for the boiler, the discharge piping is too small to effectively relieve system pressure, have improper capacity ratings which reduce its ability to relieve the output of the boiler and that discharge to an unsafe place creating a hazard for those in the area should the valve operate.

Maintenance items, such as damaged or leaking components, are often noted during the inspection:

- Correction of exhaust leaks prevents combustion gases from entering the spaces.
- Correction of piping leaks prevents corrosion, which can lead to a pressure part failure, and maintains the integrity of the system.
- Refractory damage needs to be repaired to ensure proper metal temperatures in the boiler and reduce the chance of metal damage due to high temperatures.

Summary of Possible Regulatory Options

Option 1: No Changes to Boiler Inspection Requirements

Annual inspections are performed on low-pressure heating boilers located in schools and municipally owned buildings. These boilers are inspected to a national standard and maintained to the code of construction to which they were built. Regulatory oversight tracks the certificate status and required repairs. This requirement has been in place for many years. The annual inspection identifies a problem before there is a safety concern which allows for planned corrective actions, reducing the need for emergent repairs. These inspections note the proper functioning of the boiler which helps to ensure the system is running efficiently, thereby reducing operating costs.

The issue remains that all low-pressure boilers in public buildings are not treated equally in the State of Maine. This causes confusion during installation because the codes of construction and installation standards are inconsistent between locations that require an inspection and those that do not. Since not all boilers in public buildings get inspected, there is a potential public safety hazard due to improper maintenance or installation. The lack of an inspection could also lead to inconvenient downtime, as items in need of maintenance or repair would have been noted and corrected as a result of the inspection process.

Option 2: Elimination of Low-Pressure Heating Boiler Inspection Requirements for Heating Boilers Located in Schoolhouses or Municipally Owned Buildings

Currently, annual inspections must be performed on low-pressure boilers located in schools and municipally owned buildings. The repeal of this requirement would eliminate the annual cost associated with the boiler certificate fee, which is currently \$80 per boiler.

If these inspections are eliminated, there would be no mechanism in place to ensure that boilers are constructed and installed in accordance with the standards adopted by the Board. Periodic inspections routinely identify code violations. These code violations are safety concerns, as noted in the *Common Inspection Violations* section of this report. If no inspections were performed, violations would not be brought to the owner's attention. The condition of the boiler would become worse until it gets to an emergent and potentially dangerous situation. State oversight ensures that boilers are constructed to a safe and proven code of construction, installed in accordance with those standards and inspected to national safety standards. The annual inspection verifies the safe operation of the boiler while in operation to ensure that the controls and safety devices are working properly.

Option 3: Inspect Boilers in All Public Places, Except Private Residences and Federal Buildings

If a decision is made to periodically inspect boilers in all public buildings, except those owned by the federal government, all parties involved with the installation of boilers in these buildings will have consistent standards to follow--simplifying the installation process. Boilers located in all public places, except federal buildings, would be inspected to a national standard and maintained to the code of construction to which they were built. This would reduce the potential public safety hazard due to improper maintenance or installation. An independent third party inspection focused on the safety of the unit would reduce downtime for maintenance items that would be noted during the inspection process. In theory, the risk associated with the operation of these boilers would be reduced and costs would be more controlled as maintenance issues are corrected before they become a problem. Maine law would be comparable with boiler oversight in New England and nationwide. This regulatory change would increase the level of oversight and initially increase costs to building owners due to the expense of an inspection and certificate. An increase in the numbers of inspected boilers would increase the administrative burden of registering, tracking and ensuring compliance with State law and national codes.

Department Position

This report outlines several possible regulatory options. In the Department's view, it is not sound public policy to repeal the inspection requirements for steam heating, hot water heating and hot water supply boilers located in schoolhouses and owned by municipalities. These inspections identify boiler deficiencies which are corrected thereby enhancing public safety and mitigating the risks associated with boiler operation.

At this time, the Department can not endorse periodic inspections of all low pressure boilers located in public buildings. The absence of such inspections has produced no evidence of harm to the public, and given current limitations in terms of staffing and other resources a broad expansion of periodic inspections can not be recommended.

If the committee wishes to pursue legislative changes, the Department would have recommendations for minor, technical improvements, including repeal of some exemptions currently in statute.

Appendix

List of stakeholders

Rep. James Gillway	Maine House of Representatives, District 41
Bruce Gerrity	American Insurance Association
Adam Guiggey	Cianbro
Mike Roby	FM Global Insurance
Kevin Smith	Hartford Steam Boiler Inspection & Insurance Company
Gregory Connors	Maine Municipal Association
Gregory Dugal	Maine Innkeepers Association
Brian Gay	Mercy Hospital
Tammy Butts	Maine Hospital Association
Dick Grotton	Maine Restaurant Association & Maine Innkeepers Association
Debra Hart	Maine Merchants Association
Jamie Py	Maine Energy Marketers Association
John Burpee	Dept. of Professional and Financial Regulation
Cheryl Hersom	Dept. of Professional and Financial Regulation
Peter Holmes	Dept. of Professional and Financial Regulation